European Training and Research in Peritoneal Dialysis—A Network to Deliver Scientific Peritoneal Dialysis Training to a New Generation of Researchers

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Peritoneal dialysis (PD) utilization varies across countries, and of the factors that explain the variation, the scientific and clinical knowledge of health care professionals is potentially important. In this paper, we describe a European collaboration—between 8 academic PD research programs, a small-to-medium-sized enterprise, and a large PD product manufacturer—that received significant research funding from the EU commission to establish a training network. European Training and Research in Peritoneal Dialysis (EuTRiPD) is providing training to 12 PhD students who have moved within the European Union and are completing research training. The underlying structure and processes within EuTRiPD (http://www.eutripd.eu) are described, and the benefits of the collaborative approach are discussed. This model could be useful to other research groups and will assist in maintaining and growing scientific expertise in PD research.

Key words
Education, research, training

Introduction
Since the mid-1980s, peritoneal dialysis (PD) has become a well-established dialysis modality across the world. The potential patient benefits in terms of lifestyle and freedom are well known. In addition, the literature comparing patient survival on PD and on hemodialysis (HD) as the initial dialysis modality shows a consistent survival benefit for PD during the first 2–3 years and general equivalence thereafter (1,2). Indeed, recent Danish data demonstrate a consistent survival benefit with PD of almost 10 years in nondiabetic patients and approximately 6 years in diabetic patients (3). Yet despite the demonstrated consistency of clinical outcome benefits, the use of PD varies across the world (4). In Europe, the percentage of prevalent patients receiving PD varies from approximately 24% in Sweden and Denmark to approximately 5% or less in Portugal and Germany. Globally, the differences can be even starker, ranging from more than 75% in Hong Kong to less than 4% in Japan.

The difference in PD usage can be attributed to a variety of factors (as summarized in Figure 1), including factors relating to the population and social structure of a country, its health care system, and renal unit organizational issues. Another potential factor is variation in the knowledge of the clinical and scientific aspects of PD, including a lack of scientific competency in new scientists and a lack of innovative research into peritoneal and systemic changes during PD therapy. This potentially modifiable factor, if improved, could therefore, in time, improve access to PD therapy. A project to establish a high-quality research network that would train a new generation of PD researchers in Europe was therefore started.

Methods
A group of active PD researchers and representatives from the dialysis industry’s research and development sector formed a plan to apply to the European Union...
for funding for a training network. The 28 countries of the European Union provide significant research funding through EU Commission grant rounds. For instance, in the next round (2014–2020), €61 billion will be available for research grants, including €6 billion for training networks. Funding from the European Union is based on the presence of collaboration between research groups in different countries and the mobility of researchers. In addition, funding decisions by the EU Commission are based on the clear presence in the research application of

- excellence in science,
- industrial collaboration and leadership from both large companies and small-to-medium-sized enterprises, and
- societal challenges relevant to EU countries.

The PD consortium included 10 full partners, including 8 PD research groups from universities in EU countries (VU University Medical Centre, Amsterdam, Netherlands; Medizinische Universität Wien, Vienna, Austria; Cardiff University, Cardiff, United Kingdom; Université de Strasbourg, Strasbourg, France; Charité–Universitätsmedizin Berlin, Berlin, Germany; Uniwersytet Medyczny w Poznaniu, Poznań, Poland; Agencia Estatal Consejo Superior de Investigaciones Científicas, Madrid, Spain; UniversitätsKlinikum Heidelberg, Heidelberg, Germany), 1 small-to-medium-sized enterprise researching new developments in PD fluid (Zytoprotec, Vienna, Austria), and 1 large dialysis company (Baxter, Brussels, Belgium). The consortium also included associate partners with specific roles in the proposed training network, including a PD education organization (EuroPD), a large pharmaceutical company (Abbott Laboratories), a kidney research charity (Kidney Research UK), and a kidney patient organization (Dutch Kidney Foundation). The consortium applied to the EU Marie Curie Initial Training Networks scheme, which provides funding for a group of PhD students within a training network created by the partners. The application included full details of the societal impact of chronic kidney disease and, in particular, the variation in access to PD across Europe; the scientific studies proposed to meet the scientific objectives and the organization of those studies into 3 collaborative work packages; the training network proposed; and clarity with respect to industrial involvement and patient engagement.

The overall aims of the application for European Training and Research in Peritoneal Dialysis (EuTRiPD) were these:

- To identify diagnostic and therapeutic tools to improve PD outcomes by identifying mechanisms and interventions that promote survival and the function of the peritoneal membrane and that prevent infectious complications
- To remove current geographic barriers both to the underutilization of PD therapy and to training in the field of PD because of a lack of exchange of expertise, technology, and experience (training work package)

Results
The EuTRiPD application to the EU commission was successful, and a grant providing €3.5 million was given at the end of 2011. That funding supports 12 PhD students [“early-stage researchers” (ESRs)], who were recruited in a competitive process during 2012. The ESRs are required to move from their country of application to one of the consortium partners in a different EU country.

Figure 2 depicts the training network, with the consortium partners being shown in the outer ring.
with their specific areas of interest and expertise. They collaborate on the 3 work packages with precise objectives and deliverables:

- Understanding peritoneal injury and repair at the cellular level
- Experimental PD in complex biologic *in vivo* systems
- Translational research using biobanks

However, at the heart of the collaboration is the EuTRiPD Training Network, which trains ESRs in essential knowledge and skills. The education component of the training network was developed in consultation with international PD experts using the Delphi methodology, and it is delivered using a mixed educational methodology. The overall focus is on translating academic research into clinical practice and vice versa. Critically, the network emphasizes interdisciplinary work and intersectoral engagement that includes not only industrial involvement, but also public (through Kidney Research UK), patient (through the Dutch Kidney Foundation), and professional (through EuroPD) engagement. The curriculum also includes training in the complementary skills required for communicating, disseminating, and exploiting knowledge. An active outreach work package ensures engagement with all stakeholders and linkage with professional organizations such as the International Society for Peritoneal Dialysis and the European Renal Association–European Dialysis and Transplant Association.
The training is delivered in several ways. In the laboratories of the host partners and through formal secondments between partners, ESRs acquire new skills not available in the host institution. Formal collaboration with industry means that all ESRs spend some time in an industrial environment. In addition, ESRs complete external courses within academic settings to meet specific learning needs. The twice-yearly EuTRiPD academies give ESRs multiple opportunities for several days of interactive learning covering specific elements of the curriculum. The PD-specific curriculum relating to the epidemiology of chronic kidney disease, therapy techniques, complications, and the underlying pathophysiologic principles is supplemented by learning in:

- laboratory skills and techniques (for example, tissue culture, polymerase chain reaction, transcriptomics, 2D difference gel electrophoresis technology, confocal laser scanning microscopy, mass spectrometry, magnetic-activated cell sorting, Western blot, enzyme-linked immunosorbent assay, micro–single-photon emission computed tomography and micro-computed tomography in small animals, in vitro techniques, and catheter insertion);
- research methodology [clinical research, biobanking (sample collection, biopsy, management), epidemiology, biostatistics]; and
- academic skills (ethics, intellectual property, presentation, and medical writing).

Already, EuTRiPD is being productive in terms of scientific output, with 15 publications and numerous presentations at international congresses such as EuroPD, the Annual Dialysis Conference, and the World Congress of Nephrology to date.

Discussion

Maintenance and growth of the scientific and clinical skills in PD practice and research need initiatives in education. Education will sustain the growth of the PD modality and potentially improve clinical outcomes. Here, we have described one such initiative based on inter-country collaboration that was funded by the EU Commission to provide a comprehensive training network that will train 12 PhD students working in the PD field. EuTRiPD has been successfully established based on collaboration between academic and industrial partners and the active involvement of a patient organization, a public research funding body, and a PD education organization.

The formal training being given to the ESRs is allowing them to achieve scientific progress with presentations and publications, but is also providing them with complementary skills for a future career in research. This training network model and curriculum could be useful to other research groups and initiatives. More details can be found at http://www.eutripd.eu.

Disclosures

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References


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